

Claims

We claim:

1. A method for performing machine vision inspection of a display device,

5 the method comprising:

configuring a display inspection algorithm comprising a plurality of display inspection functions operable to perform machine vision tests on the display device;

programmatically generating a test executive sequence that implements the display inspection algorithm; and

10 executing the test executive sequence to perform the machine vision tests on the display device.

2. The method of claim 1,

wherein said programmatically generating the test executive sequence comprises 15 generating the test executive sequence without receiving user input specifying the test executive sequence.

3. The method of claim 1, further comprising:

20 displaying a graphical user interface of a display inspection test configurator, wherein the graphical user interface of the display inspection test configurator enables a user to interactively specify the display inspection algorithm; and

receiving user input specifying the display inspection algorithm to the graphical user interface of the display inspection test configurator, wherein the user input specifies the plurality of display inspection functions.

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4. The method of claim 1,

wherein said programmatically generating the test executive sequence comprises 30 programmatically including a plurality of test executive steps for display inspection in the test executive sequence.

5. The method of claim 4,

wherein each test executive step for display inspection corresponds to a display inspection function in the display inspection algorithm.

6. The method of claim 4,

5 wherein each test executive step for display inspection is configured to call one of the display inspection functions as an external code module.

7. The method of claim 4,

10 wherein the programmatically generated test executive sequence also includes one or more test executive steps to perform initialization of one of:

a hardware device;

the display inspection functions.

15 8. The method of claim 1, further comprising:

configuring one or more of the display inspection functions in the display inspection algorithm;

wherein, for each display inspection function, configuring the display inspection function comprises:

20 displaying a specialized graphical user interface for configuring the display inspection function; and

receiving user input to the graphical user interface to customize operation of the display inspection function.

25 9. The method of claim 8,

wherein the graphical user interface enables the user to specify one or more parameters of the display inspection function.

10. The method of claim 8,

30 wherein said configuring one or more of the display inspection functions comprises configuring the display inspection functions without specifying program code.

11. The method of claim 1,

wherein said programmatically generating the test executive sequence comprises programmatically including a plurality of test executive steps for display inspection in the test executive sequence;

5 wherein the method further comprises adding one or more additional test executive steps to the test executive sequence in response to user input.

12. The method of claim 11,

wherein the one or more additional test executive steps include one or more of:

10 a test executive step to perform a shock test of the display device;

a test executive step to perform a noise-vibration-harshness (NVH) test of the display device;

15 a test executive step to perform an audio test of the display device;

a test executive step to perform a mechanical test of the display device;

a test executive step to perform a battery test of the display device; and/or

20 a test executive step to perform an electrical test of the display device.

13. The method of claim 1,

wherein said programmatically generating the test executive sequence comprises

25 programmatically including a plurality of test executive steps for display inspection in the test executive sequence;

wherein said executing the test executive sequence comprises executing the plurality of test executive steps for display inspection to perform the machine vision tests on the display device.

25 14. The method of claim 13,

wherein said executing the test executive sequence further comprises:

acquiring one or more images of the display device; and

analyzing the one or more images.

30 15. The method of claim 1,

wherein the display device comprises an LCD device.

16. The method of claim 1,

wherein the display device comprises an OLED device.

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17. The method of claim 1,

wherein the display device comprises a flat panel display device.

18. The method of claim 1,

10 wherein the display device is included as a component in a product.

19. A system for performing display inspection, the system comprising:

a computer system which includes a processor and a memory medium, wherein

15 the memory medium stores:

a library of display inspection functions;

functions in response to user input;

a plurality of test executive steps, wherein each of the plurality of test

20 executive steps is operable to perform display inspection;

an image acquisition device coupled to the computer system, wherein the image acquisition device is operable to acquire an image of a display device being inspected;

wherein the test configurator is useable to programmatically generate a test executive sequence to perform an inspection of a display device, wherein the test 25 executive sequence includes a set of test executive steps operable to invoke at least one of the selected display inspection functions.

20. The system of claim 19,

wherein each of the at least one invoked display inspection functions are operable 30 to analyze an image of the display device acquired by the image acquisition device.

21. A computer-implemented method for creating a test executive sequence for a display inspection application, the method comprising:

5 displaying an image on a display, wherein the image corresponds to a display device;

displaying a display inspection test configurator which is executable to configure a set of display inspection functions in response to user input;

10 generating a test executive sequence based on the configured set of display inspection functions;

wherein the test executive sequence comprises a plurality of test executive steps operable to analyze the image of the display device to perform display inspection.

15 22. The method of claim 21, further comprising:

receiving an image of a display device being inspected; and

executing the test sequence to inspect the display device.

20 23. A memory medium for storing :

a library of display inspection functions;

a plurality of test executive steps, wherein each of the plurality of test executive steps is operable to perform display inspection;

25 a test configurator which is executable to configure a test executive sequence including one or more of the test executive steps;

program instructions executable to perform:

displaying an image of a display device on a display;

displaying the test configurator which is executable to configure the test executive sequence;

30 receiving user input to the test configurator to select one or more of the test executive steps, wherein each of the selected test executive steps is operable to perform display inspection;

wherein the user input in said step of receiving operates to produce a test executive sequence for analyzing the image of the display device.

5 24. A method for inspecting a display device, the method comprising:
 configuring a display inspection algorithm comprising a plurality of display inspection functions operable to perform tests on the display device;

 programmatically generating a test executive sequence that implements the display inspection algorithm; and

10 executing the test executive sequence to perform the tests on the display device.

25. The method of claim 24,

 wherein said programmatically generating the test executive sequence comprises generating the test executive sequence without receiving user input specifying the test executive sequence.

26. The method of claim 24,

 wherein said programmatically generating the test executive sequence comprises programmatically including a plurality of test executive steps for display inspection in the test executive sequence;

 wherein said executing the test executive sequence comprises executing the plurality of test executive steps for display inspection to perform the tests on the display device.

25 27. The method of claim 24,

 wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more machine vision tests on the display device;

 wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more machine vision tests on the display device.

28. The method of claim 27,

wherein said executing the test executive sequence to perform the tests on the display device comprises:

5 acquiring one or more images of the display device; and
analyzing the one or more images.

29. The method of claim 24,

wherein the display inspection algorithm includes one or more display inspection

10 functions operable to perform one or more audio tests on the display device;

wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more audio tests on the display device.

15 30. The method of claim 24,

wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more noise-vibration-harshness (NVH) tests on the display device;

20 wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more noise-vibration-harshness (NVH) tests on the display device.

31. The method of claim 24,

25 wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more shock tests on the display device;

wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more shock tests on the display device.

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32. The method of claim 24,

wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more mechanical tests on the display device;

wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more mechanical tests on the display device.

33. The method of claim 24,

wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more battery tests on the display device;

wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more battery tests on the display device.

34. The method of claim 24,

wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more electrical tests on the display device;

wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more electrical tests on the display device.

35. The method of claim 24,

wherein the display inspection algorithm includes one or more display inspection functions operable to perform one or more image processing tests on the display device;

wherein said executing the test executive sequence to perform the tests on the display device includes executing one or more test executive steps in the test executive sequence to perform the one or more image processing tests on the display device.